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ABSTRACT

This longitudinal study, which is second in a series of reports on the Detroit Public Schools' Extended Day Kindergarten (EDK) Program, investigated effects of the program on students as they went through elementary school. Participants were randomly selected groups of students who were provided EDK experiences and, for comparison purposes, randomly selected students who attended a traditional kindergarten and received Chapter 1 services. Reported here are findings for students selected in kindergarten in 1983-84 and 1984-85. These students were in primary grades 2 and 1, respectively, during the 1985-86 school year. Achievement data for both groups were obtained from final report cards and scores on the Assessment of Basic Curriculum Skills reading and mathematics subscales. Data were also gathered on number of days absent, compensatory education services received, and retention in grade. Achievement data indicated that in grade 2, experimental (EDK) students scored significantly higher than controls on both test results and report cards. No difference was found between experimental and control groups in grade 1. There was no difference between groups in attendance. More experimental than control students were retained in grade 1 in the 1985-86 school year. Recommendations for continuing the study are offered. (RH)

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Extended Day Kindergarten Program

Longitudinal Study

1983-84 through 1985-86

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PS 017473

Executive Summary
Extended Day Kindergarten Program
Longitudinal Study
1983-84 through 1985-86

Purpose and Features of the Program

The Extended Day Kindergarten Program (EDK) was operative in twenty-five Chapter 1 schools during the 1983-84 school year. The purpose of EDK was to serve those children "least ready" for kindergarten as indicated by the results of the Kindergarten Inventory of Developmental Skills (KIDS). EDK participants were provided additional opportunities to attain readiness by attending kindergarten for a full school day, four days a week. The fifth day was reserved for inservicing teachers, school service assistants, and parents. During the 1984-85 school year the program was expanded to eighty-seven Chapter 1 schools and in 1985-86 the total number of schools reached ninety. In 1983-84 approximately seven hundred fifty students were served; in 1985-86 the number had increased to over 2,700 students.

Evaluation Methodology

The main purpose of the EDK longitudinal study is to follow random sample groups of students from the EDK Program through elementary school. Comparison groups selected from the traditional Chapter 1 kindergarten population are also included in the study. Students who were served in the traditional Chapter 1 program attended school five half days per week, but were given additional services from a school service assistant and/or a Chapter 1 teacher. The traditional Chapter 1 students were also selected for services on the basis of the Kindergarten Inventory of Developmental Skills (KIDS) test results.

The study includes comparisons of experimental (EDK) and control (traditional kindergarten) group reading and mathematics test results, final report card marks in language arts and mathematics, attendance, compensatory education service, and retention. The sample groups will continue to be compared through grade five.

The study will eventually include five phases beginning with the 1983-84 experimental and control kindergarten groups. At the beginning of each school year two groups will be selected for each new phase of the study. Presented below is a chart which illustrates the five phases of the longitudinal study.

Five Phases of the Extended Day Kindergarten
Longitudinal Study

Grade Levels

School Year	Phase A	Phase B	Phase C	Phase D	Phase E
1983-84	Kindergarten				
1984-85	Primary 1	Kindergarten			
1985-86	Primary 2	Primary 1	Kindergarten		
1986-87	Grade 3	Primary 2	Primary 1	Kindergarten	
1987-88	Grade 4	Grade 3	Primary 2	Primary 1	Kindergarten
1988-89	Grade 5	Grade 4	Grade 3	Primary 2	Primary 1

Included in this report are the findings for students selected in kindergarten for Phase A and Phase B. These students were in Primary 2 and Primary 1 respectively, as indicated on the chart, during the 1985-86 school year.

Findings, Phase A

Phase A experimental students, who were enrolled in Primary 2 in 1985-86, scored significantly higher in reading and mathematics than the control group from this phase. The EDK students also received significantly higher report card marks in language arts and mathematics than the control students.

There were no differences between the groups related to attendance. The experimental and control groups average number of days absent were 12 and 16, respectively, and although the mean number of days absent for the experimental students was lower it was not significant.

More experimental than control students were retained in Primary 1 for the 1985-86 school year. There were seven students retained from the experimental group while only three of the control students were retained in Primary 1. The average number of days absent for all students who were retained, from experimental and control, was over thirty.

Compensatory education services were provided to more control students than experimental students. Since there were no differences between these groups at the end of Primary 1 in 1984-85 as measured by test scores or report card marks, the fact that the experimental students were selected less frequently had to be determined by teacher judgement. It is also interesting to note that while these students received less compensatory education service during the year, they achieved at a higher level as measured by their test scores and as measured by report card marks.

Finally, when looking at the Phase A groups and those students who no longer are included in the study there were more control students who left the school system than experimental students.

Findings, Phase B

There were no differences between the Primary 1 experimental and control groups in Phase B as measured by test scores, report card marks, or attendance. These findings were the same as the findings for the experimental and control groups in Phase A when they were enrolled in Primary 1. In addition, there were no differences in the groups as related to selection for compensatory education. This finding was also true for the Phase A students in 1984-85. Finally there were more students from the control group retained in kindergarten than experimentals. This result was also true for the Phase A students.

Recommendations

It is recommended, based upon the findings of this study, that the longitudinal study be continued. For 1986-87, it is expected that Phase B evaluation findings will continue to support the findings on the EDK and control groups in Phase A. Evaluation data on experimental and control pupils from Phase C will also be available for comparison with Phase B and Phase A groups.

The fact that students who were retained in Primary 1 from the Phase A groups, both experimental and control, were absent an average of thirty or more days may indicate a need to look more closely at elementary school attendance.

Finally, based upon the results of a Chicago study and the findings of an Educational Research Service, Inc. survey, it is recommended that in the 1986-87 Extended Day Kindergarten evaluation some effort be devoted to studying the differences in EDK student achievement as related to class size.

Extended Day Kindergarten - Longitudinal Study
Summary Table

Grade	Variables	Phase A Kindergarten 1983-84		Phase B Kindergarten 1984-85		Phase C Kindergarten 1985-86	
		EDK N=50	NonEDK N=50	EDK N=40	NonEDK N=40	EDK N=60	NonEDK N=60
K	CAT - 10 Pre-Reading	100.1*	83.1	94.4*	84.9	95.0	91.6
	CAT - 10 Mathematics	17.8*	13.5	16.5	15.1	17.7*	15.0
1	CAT - 11 Reading	11.9	10.6	11.8	11.5		
	CAT - 11 Mathematics	43.6	41.0	43.3	44.3		
	Report Card Marks Language Arts	2.09	1.76	1.95	2.07		
	Report Card Marks Mathematics	2.19	1.80	1.72	1.97		
	Attendance Days Absent	16.98	18.76	16.98	16.44		
	Number Retained-K	0	4	0	1		
	Number and % of Group Selected for Compensatory Ed.	28 (57%) N=49	31 (74%) N=42	20 (53%) N=38	22 (56%) N=39		
2	CAT - 12 Reading	15.31*	12.16				
	CAT - 12 Mathematics	54.07*	49.11				
	Report Card Marks Language Arts	2.44*	1.86				
	Report Card Marks Mathematics	2.47*	1.62				
	Attendance Days Absent	12.20	16.38				
	Number Retained in Primary 1	7	3				
	Number and % of Group Selected for Compensatory Ed.	22 (54%) N=41	22 (61%) N=36				

* Significant Difference

Extended Day Kindergarten
Longitudinal Study

Background

This report is the second in a series of longitudinal reports studying the Extended Day Kindergarten Program of the Detroit Public Schools. The main purpose of the longitudinal study is to investigate the effects of the program on students as they progress through elementary school. The first report was produced in March, 1986.

The study involves following randomly selected groups of students who were provided with the EDK experiences. Included for comparison purposes are randomly selected groups of students who participated in a traditional kindergarten program and received Chapter 1 services. This report presents data on the experimental (EDK) and control (traditional kindergarten) groups selected for Phase A and Phase B of the study.

The study will eventually involve five phases. Each phase will include an experimental and a control group. Presented below is a chart that illustrates the five phases of the longitudinal study.

Five Phases of the Extended Day Kindergarten Longitudinal Study

Grade Levels of Experimental and Control Groups

School Year	Phase A	Phase B	Phase C	Phase D	Phase E
1983-84	Kindergarten				
1984-85	Primary 1	Kindergarten			
1985-86	Primary 2	Primary 1	Kindergarten		
1986-87	Grade 3	Primary 2	Primary 1	Kindergarten	
1987-88	Grade 4	Grade 3	Primary 2	Primary 1	Kindergarten
1988-89	Grade 5	Grade 4	Grade 3	Primary 2	Primary 1

Included in this report are findings for students selected in kindergarten for Phase A and Phase B. These students were in grades Primary 2 and Primary 1 respectively, in the 1985-86 school year.

Achievement data for the Phase A and Phase B students were obtained from two sources:

1. Assessment of Basic Curriculum Skills (ABCS) reading and mathematics test results equated to the California Achievement Test (CAT). Test results were obtained from the April, 1986 administration of the ABCS.

2. Final report card marks in language arts and mathematics were obtained from the June, 1986 report cards. Report card marks were quantified and means were calculated for both subject areas. Report card marks and the scale follow:

O (Outstanding) = 4.0
S+ (Satisfactory Plus) = 3.0
S (Satisfactory) = 2.0
S- (Satisfactory Minus) = 1.0
N (Needs to Improve) = 0.0

Three other variables were also included for the sample groups. They included the following:

1. Number of days absent as indicated on the report cards in June, 1986.

2. Compensatory education service received by the experimental and control groups during the 1985-86 school year.

3. A retention factor which is the number of students who were not promoted to Primary 1 or Primary 2 during the 1985-86 school year.

Differences in the number of students in the Phase A and Phase B groups, as presented in the following tables, are the result of missing data, e.g. student not tested, attendance and report card marks not submitted by school.

Findings, Phase A Experimental and Control Groups

Test result data are presented in Tables 1 and 2. A t-test applied to test scores obtained at the end of Primary 2 indicates that the experimental (EDK) group scored significantly higher than the control (traditional kindergarten) group in both reading and mathematics.

Table 1
Comparison of Means of Raw Scores in Reading
California Achievement Tests, Level 12, Form C
Phase A Groups
Primary 2

Group	N	Mean	S.D.	t-value
Experimental	38	15.31	5.33	
Control	36	12.16	5.58	2.48*

*Significant at $p < .05$

Table 2
Comparison of Means of Raw Scores in Mathematics
California Achievement Tests, Level 12, Form C
Phase A Groups
Primary 2

Group	N	Mean	S.D.	t-value
Experimental	38	54.07	10.06	
Control	35	49.11	10.86	2.02*

*Significant at $p < .05$

Comparison of report card marks for the Phase A groups are presented in Tables 3 and 4. Results indicate that the experimental students received significantly higher report card marks in Primary 2 language arts and mathematics than the control group.

Table 3
Comparison of Means of Language Arts Report Card Marks
Phase A Groups
Primary 2

Group	N	Mean	S.D.	t-value
Experimental	39	2.44	1.21	
Control	36	1.86	1.01	2.23*

*Significant at $p < .05$

Table 4
Comparison of Means of Mathematics Report Card Marks
Phase A Groups
Primary 2

Group	N	Mean	S.D.	t-value
Experimental	39	2.47	1.29	
Control	36	1.62	1.35	2.77*

*Significant at $p < .05$

Attendance data are reported in Table 5 for the Phase A students. The findings indicate that there was no difference in the attendance of the experimental and control groups.

Table 5
Comparison of Means of Number of Days Absent in Primary 2
Phase A Groups

Group	N	Mean	S.D.	t-value
Experimental	39	12.20	11.65	
Control	36	16.38	13.15	1.46

Table 6 presents the number and percent of students from the Phase A groups who were absent 27 or more days, where twenty-seven days represents 15% of the official 181-day school year. Based on the data, it can be seen that fewer experimental students were absent 15 percent or more of the year.

Table 6
Number and Percent of Phase A Students Absent 27
or More Days in the 1985-86 School Year

Group	Number of Students in the Group	Number of Students Absent 27 days or more	Percent of Group
Experimental	39	4	10
Control	36	9	25

Presented in Table 7 are the data for the Phase A groups as related to the retention factor. Included are those students that were not promoted in the 1985-86 school year. The experimental group had seven students retained in Primary 1 while the control group had only three students retained.

Table 7
Number and Percent of Sample Students Retained
in Primary 1 for the 1985-86 School Year

Group	Number of Students in the Group	Number of Students Retained	Percent of Group
Experimental	48	7	14.6
Control	39	3	7.7

Presented in Table 8 are the number of students in the Phase A groups retained in Primary 1 and the mean number of days absent for those who were retained. The percent of EDK students retained in Primary 1 was twice that of the control students even though the average number of days absent was approximately the same (31 vs. 32) for both groups of retainees.

Table 8
Number and Percent of Phase A Students Retained in Primary 1
and Mean Number of Days Absent in Primary 1

Group	N	Retained in Primary 1 f	Percent	Mean Number of Days Absent in Primary 1 1984-85	Percent of School Year Absent
Experimental	48	7	14.6	31	17
Control	39	3	7.7	32	18

Reported in Table 9 are the numbers and percents of students in the Phase A groups who received compensatory education service during the 1985-86 school year. The experimental students were selected to receive compensatory education service with less frequency than the control group.

Table 9
Comparison of the Number and Percent of Students in Phase A Receiving Compensatory Education Services During the 1985-86 School Year
Primary 2

Group	N	Chapter 1 Service		Article 3 Service		Art. 3 & Ch. 1 Service		No Comp. Ed. Service	
		f	%	f	%	f	%	f	%
Experimental	41	8	20	3	7	11	27	19	46
Control	36	2	6	2	6	18	50	14	39

Originally, the sample size for the Phase A EDK and Control groups was 50 students. Presented in Table 10 are the number and percent of students not included in the longitudinal study and the reason. More students from the control group than from the experimental group have left the school system. More students from the control group than from the experimental were retained in kindergarten, however, more students from the experimental group were retained in Primary 1. Over the two-year period the same number of students were lost from each group because of nonpromotion.

Table 10
Number and Percent of Sample Students Not Included in Phase A Longitudinal Study

Reason	Experimental		Control	
	f	%	f	%
Retained in Kindergarten	0	0	4	8
Left School System After Kindergarten	1	2	4	8
Deceased	1	2		
Retained in Primary 1	7	14	3	6
Left School System After Primary 1	0	0	3	6

Number of sample students selected originally for each group was 50.

Findings, Phase B Experimental and Control Groups

Reading and mathematics test scores of the experimental and control groups of Phase B are presented in Tables 11 and 12. Test results indicate that there was no difference in the experimental and control group achievement. This result reinforces the findings from last year for the Phase A group when they were in the Primary 1.

Table 11
Comparison of Means of Raw Scores in Reading
California Achievement Tests, Level 11, Form C
Phase B Groups
Primary 1

Group	N	Mean	S.D.	t-value
Experimental	37	11.75	3.81	
Control	38	11.50	4.04	.28

Table 12
Comparison of Means of Raw Scores in Mathematics
California Achievement Tests, Level 11, Form C
Phase B Groups
Primary 1

Group	N	Mean	S.D.	t-value
Experimental	37	43.29	6.44	
Control	38	44.26	6.71	.63

Comparisons of achievement, as measured by report card marks, for the Phase B groups are presented in Tables 13 and 14. There were no differences between the experimental and control groups in either language arts or mathematics. This finding also supports the Primary 1 results for the Phase A groups reported in the longitudinal report for the 1984-85 school year.

Table 13
Comparison of Means of Language Arts Report Card Marks
Phase B Groups
Primary 1

Group	N	Mean	S.D.	t-value
Experimental	38	1.95	1.13	
Control	37	2.07	1.07	.49

Table 14
Comparison of Means of Mathematics Report Card Marks
Phase B Groups
Primary 1

Group	N	Mean	S.D.	t-value
Experimental	38	1.72	1.39	
Control	37	1.97	1.48	.74

Attendance data for the Phase B groups also indicates no difference. The average number of days absent for both the experimental and control groups was sixteen. Comparisons are presented in Table 15.

Table 15
Comparison of Means of Number of Days Absent in Primary 1
Phase B Groups

Group	N	Mean	S.D.	t-value
Experimental	38	16.98	12.29	
Control	37	16.44	14.87	.17

Table 16 presents the number and percent of students from the Phase B groups who were absent 15 percent or more of the school year. Based upon the 1985-86 school year of 181 days reported are those students who were absent 27 or more days during the year. From the table it can be seen that more experimental than control students were absent 15 percent or more of the school year.

Table 16
Number and Percent of Phase B Students Absent 27
or More Days in the 1985-86 School Year

Group	Group Size	Number of Students	Percent of Group
Experimental	38	8	21
Control	37	6	16

Presented in Table 17 are data for the Phase B groups as related to the retention factor. Included are the students who were not promoted to Primary 1 after kindergarten. There were no students from the experimental group that were retained in the kindergarten; on the other hand, one student from the control group was retained in kindergarten. This finding is the same as the result from the Phase A groups upon their completion of kindergarten.

Table 17
Number and Percent of Sample Students Retained in Kindergarten for the 1985-86 School Year

Group	Group Size	Number of Students Retained	Percent of Group
Experimental	40	0	0
Control	40	1	2.5

Reported in Table 18 are the number and percent of students in Phase B who received compensatory education services in Primary 1 during the 1985-86 school year. The experimental and control students were selected for compensatory education services with about the same frequency. This result is not the same as the results for last year for the Phase A students when they were in Primary 1. Experimentals from Phase A were selected for compensatory education less frequently than the controls.

Table 18
Comparison of the Number and Percent of Students in Phase B Receiving Compensatory Education Services During the 1985-86 School Year
Primary 1

Group	N	Chapter 1 Service		Article 3 Service		Art. 3 & Ch. 1 Service		No Comp. Ed. Service	
		f	%	f	%	f	%	f	%
Experimental	38	7	18	1	3	12	32	18	47
Control	39	7	18	3	8	12	31	17	44

Presented in Table 19 are the numbers and percents of students from Phase B who are not included in the longitudinal study and the reason.

Table 19
Number and Percent of Sample Students Not Included in Phase B Longitudinal Study

Reason	Experimental f	Experimental %	Control f	Control %
Retained in Kindergarten	0	0	1	3
Left School System After Kindergarten	2	5	1	3

Number of sample students selected originally for each group was 40.

Phase A Conclusions

Experimental students from the Phase A groups scored significantly higher than the control students in reading and mathematics as measured by the California Achievement Tests. The EDK group also received significantly higher report card marks in language arts and mathematics than the non-EDK group.

There was no difference between the experimental and control groups from Phase A as measured by the attendance of these two groups. The average number of days absent for the experimental group was smaller than the control group. In addition, when looking at the attendance of the two groups, twice as many control students were absent 27 or more days during the school year.

The experimental group had seven students retained in Primary 1 while the control group had only three retained. The average number of days absent for the retained students was 31 and 32 respectively. The high absenteeism may have accounted for the retention in both the experimental and control groups.

More compensatory education service was provided to the control group than the experimental group from Phase A. Fifty percent of the control group received both Article 3 and Chapter 1 service during the 1985-86 school year while only twenty-seven percent of the experimental group was selected to receive both types of compensatory education services.

Finally, when looking at the number of students who are no longer included in the study, records indicate that more students from the control group than from the experimental group have left the school system. Only one student from the experimental group is no longer attending a Detroit Public School while seven students from the control group have left the school system.

Phase B Conclusions

There was no difference between the experimental and control groups in Phase B as measured by achievement test results or report card marks. This

finding is the same as for the Phase A students when they were in Primary 1.

Attendance data from Phase B also indicate no difference between the two groups. This finding also supports findings from the study of Phase A students when they were in Primary 1. However, more experimental than control students from Phase B were absent 27 or more days during the 1985-86 school year; whereas in Phase A, a greater number of controls was absent 27 or more days.

The retention factor indicates that more students were retained in kindergarten from the control group than from the experimental group. There were no students retained in kindergarten from the experimental group while one student from the control group was retained. This finding also was true for the Phase A students in 1984-85.

Compensatory education services were provided to both groups with the same frequency in 1985-86. This finding does not follow the result of the Phase A groups from Primary 1. The Phase A experimental students were selected less frequently for compensatory education service than the controls.

Finally, more students from the experimental group than from the control have left the school system. Only one student from the control group has left the school system while two from the experimental are no longer enrolled.

Recommendations

Achievement data indicate that in Primary 2 the experimental students (EDK) scored significantly higher than the controls in both test results and report card marks. In Primary 1 there was no difference between the experimental and control groups in either 1984-85 or 1985-86. Achievement data should be studied to see if the difference between the experimental and control groups from Phase A is maintained and if a difference between the experimental and control groups from Phase B will become apparent in Primary 2. The EDK and experimental groups from Phase C should be added to the study and trends for all three phases should continue to be studied.

There were no differences in attendance in Primary 1 for either the Phase A or Phase B students and there was no difference in Primary 2 for the Phase A groups. However, students who were retained in Primary 1 from the Phase A groups were absent an average of thirty days during the school year. Attendance should continue to be studied as a contributing factor to retention for both experimental and control groups in all phases.

There were no students retained in kindergarten from either Phase A or Phase B experimental groups. Students were retained in kindergarten from both Phase A and Phase B control groups. In Primary 1 however, more students from the experimental group of Phase A were retained.

Compensatory education services were provided to both experimental and control groups from Phase B with the same frequency while they were in Primary 1. However, in Primary 2 experimental students from Phase A received less compensatory education service which was also true when they were in Primary 1.

The students from Phase B should be followed in Primary 2 to determine if the EDK group is selected less frequently for compensatory education service.

The following recommendations are made based upon the findings from this EDK longitudinal study and the findings of other recent kindergarten research.

The attendance of the students who were retained in Primary 1 may indicate that more careful attention should be paid to improving attendance at the Primary Unit level. The benefits of the Extended Day Kindergarten Program can only be diminished by students' lack of attendance at the Primary Unit level. Samuel Brodbelt stated in his October, 1985 Clearing House Article "Absenteeism: Critical Problem in Learning":

> "Generally, pupils in attendance learn more. In contrast, high absenteeism (a fifteen percent rate for the school year is serious) leads to failure and dropping out of school."

Students who were retained were absent an average of 31 or 32 days during the school year which is over the 15 percent serious rate.

A recent evaluation of kindergarten programs in Chicago indicated that students who were in a traditional kindergarten but with smaller class sizes achieved at a higher level than those students who were in extended day classes with the normal class size of 28. Based upon the Chicago findings it is recommended that in the 1986-87 school year evaluation of the Extended Day Kindergarten Program the achievement of students from classes of twenty students or less be compared to the achievement of students from classes with higher enrollments.

In addition to the findings from the Chicago study in a recent survey conducted by the Educational Research Service, Inc., kindergarten teachers from 1,082 school districts responded that the most effective class size for a full day class would be twenty students. This finding may also be an indicator that the class size of Detroit's Extended Day Kindergarten should be considered as a variable in the effectiveness of the program.

It is finally recommended that the longitudinal study be continued to investigate the long range effects of the program on student achievement, attendance, compensatory education service, and retention.

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